RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1999

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708026F Product/Reliable/Avail/Maintain Prog

COST *($ In Thousands)*	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21,613	10,440	9,382	17,341	20,916	24,351	27,803	31,261	Continuing	Continuing
2146 PRAM	12,221	10,440	9,382	17,341	20,916	24,351	27,803	31,261	Continuing	Continuing
4761 Aging Aircraft	9,392	0	0	0	0	0	0	0	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

Note: Project 4761, Aging Aircraft, transfers to PE 0605011F, RDT&E for Aging Aircraft, in FY 1999 and out.

(U) A. Mission Description: This Operational Systems Development program addresses acute reliability and maintainability (R&M) deficiencies by funding prototypes of developing and mature, commercial-off-the-shelf technologies that can be incorporated into existing Air Force weapon systems and subsystems. The objective of this program is to emphasize the rapid incorporation of R&M technology "fixes" that will improve the operational capability of weapon systems and equipment at a significantly lower cost. PRAM, a level-of-funding program, depends on MAJCOM, Air Logistics Center (ALC), and field support to implement the technology once the initial investment is completed. Note: Congress added $22 million to this program in FY 1998 for aging aircraft ($10 million), blade repair facility efforts ($8 million), and aging landing gear efforts ($4 million). PRAM funding increases in FY 2000 and beyond are due to increased emphasis on life cycle cost reduction.

(U) B. Budget Activity Justification: This program is in Budget Activity 7, Operational Systems Development, because projects are being engineered for already operational weapon systems.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog

(U) C. Program Change Summary ($ in Thousands):

	FY 1998	FY 1999	FY 2000	FY 2001	Total Cost
(U) Previous President's Budget/FY 1999 PB	21,764	970	9,753	20,891	Cont
(U) Appropriated Value	23,032	10,470			
(U) Adjustments to Appropriated Value					
a. Congressional/General Reductions	-772	-30			
b. SBIR	-499				
c. Omnibus/Other Above Threshold Reprogrammings	-148				
d. Below Threshold Reprogrammings	0				
(U) Adjustments to Budget Years Since FY 1999 PB			-371	-3,550	
(U) Current Budget Submit/FY 2000 PB	21,613	10,440	9,382	17,341	Cont

(U) Significant Program Changes: Adjustments in FY 2000 and FY 2001 represent reallocation to higher priority Air Force needs.

FY 1999: $296 identified as a source for SBIR.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog	PROJECT 2146

COST *($ In Thousands)*	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
2146 PRAM	12,221	10,440	9,382	17,341	20,916	24,351	27,803	31,261	Continuing	Continuing

(U) A. Mission Description: Productivity/Reliability/Availability/Maintainability (PRAM) addresses acute reliability and maintainability (R&M) deficiencies by funding prototypes of developing and mature, commercial-off-the-shelf technologies that can be incorporated into existing Air Force weapon systems and subsystems. The objective of this program is to emphasize the rapid incorporation of R&M technology "fixes" that will improve the operational capability of weapon systems and equipment at a significantly lower cost. Average project length is twenty-seven months. This program has a proven return on investment averaging 18:1. PRAM, a level-of-funding program, depends on MAJCOM and field support to implement the technology when the initial investment is completed.

(U) FY 1998 ($ in Thousands):
- (U) $7,196 Initiated projects at Oklahoma City Air Logistics Center blade repair facility aimed at improving process flow and increasing shop efficiency.
- (U) $265 Continued B-1 projects focusing on subsystem R&M to increase overwing fairing seal and pivot bearing service lives.
- (U) $1,953 Continued work on aerospace support equipment and base infrastructure R&M projects to reduce maintenance costs and increase equipment availability.
- (U) $790 Continued work on aircraft avionics R&M projects to improve system availability.
- (U) $1,137 Continued work on airframe R&M projects, including development of a durability patch for low-cost, reliable installation in the field.
- (U) $325 Completed projects identified through Air Force Materiel Command's Technology Master Plan (TMP). TMP projects are prioritized based on operational capability, reliability and maintainability improvement, and cost.
- (U) $95 Continued space system efforts to improve mission readiness.
- (U) $460 Started and completed high priority quick response projects identifed by operational commands to reduce maintenance downtime.
- (U) $12,221 Total

(U) FY 1999 ($ in Thousands):
- (U) $369 Continue airframe R&M efforts to reduce overall Air Force operations and support costs.
- (U) $70 Continue space system efforts to improve mission readiness.
- (U) $205 Start and complete high priority, quick response R&M projects identified by the operational commands to reduce maintenance downtime.
- (U) $5,500 Initiate and complete Modeling & Reengineering effort.
- (U) $4,000 Complete Aging Landing Gear Life Extension effort.
- (U) $296 Identified as a source for SBIR.
- (U) $10,440 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog
	PROJECT 2146

(U) FY 2000 ($ in Thousands):
- (U) $3,000 Initiate subsystem R&M projects that will reduce the overall maintenance burden, improve subsystem capabilities and reliability, and improve mission readiness.
- (U) $3,500 Continue airframe R&M efforts to reduce overall Air Force operations and support costs.
- (U) $1,882 Continue efforts for aerospace support equipment and base infrastructure R&M enhancements to increase equipment reliability.
- (U) $1,000 Start and complete high priority, quick response R&M projects identified by the operational commands to reduce maintenance downtime.
- (U) $9,382 Total

(U) FY 2001 ($ in Thousands):
- (U) $5,270 Continue work in subsystem R&M projects that will reduce the overall maintenance burden, improve subsystem capabilities and reliability, and improve mission readiness.
- (U) $6,570 Continue airframe R&M efforts to reduce overall Air Force operations and support costs.
- (U) $3,890 Continue efforts in support equipment and base infrastructure R&M to reduce maintenance costs and increase equipment availability.
- (U) $1,611 Start and complete high priority, quick response R&M projects identified by the operational commands to reduce maintenance downtime.
- (U) $17,341 Total

(U) B. Project Change Summary - Description of Significant Changes: Not Applicable.

(U) C. Other Program Funding Summary:

(U) Related Activities:
- (U) PE 0605011F, RDT&E for Aging Aircraft.

(U) D. Acquisition Strategy: All projects within this Program Element were awarded competitively, either by full and open competition or by amending task order contracts with competition for subcontracts.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE: February 1999
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0708026F Product/Reliable/Avail/Maintain Prog — PROJECT: 2146

(U) E. Schedule Profile:

	FY 1998				FY 1999				FY 2000				FY 2001			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(U) Blade Repair Contract Award		X														
(U) Request For Proposal Release	X	X			X	X			X	X			X	X		
(U) Contract Awards		X	X			X	X			X	X			X	X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog
	PROJECT 2146

(U) A. Project Cost Breakdown ($ in Thousands):

	FY 1998	FY 1999	FY 2000	FY 2001
(U) Blade Tip Repair Project	7,196	5,500	0	0
(U) Aircraft Subsystem Reliability & Maintainability (R&M)	265	0	3,000	5,270
(U) Aero Support Equipment and Base Infrastructure R&M	1,953	0	1,882	3,890
(U) Aircraft Avionics R&M	790	0	0	0
(U) Airframe R&M	1,137	369	3,500	6,570
(U) Technology Master Plan Projects	325	0	0	0
(U) Space Systems R&M	95	70	0	0
(U) Quick Response	460	205	1,000	1,611
(U) Aging Landing Gear Life Extension	0	4,000	0	0
(U) Identified as a source for SBIR		296		
(U) Total	12,221	10,440	9,382	17,341

(U) B. Budget Acquisition History and Planning Information ($ in Thousands):

Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	To Complete	Total Program
Product Development Organizations											
Identified as a source for SBIR							296				
Numerous	Various	Various	N/A	N/A	N/A	3,084	442	7,829	15,341	Cont	Cont
General Atomics	Various	Various	N/A	N/A	2,707	7,196	9,102	0	0	0	19,005
Lockheed-Martin	Various	Various	N/A	N/A	N/A	510	200	0	0	0	Cont
Jentek Sensors	CPFF	Jul 98	N/A	N/A	0	177	120	0	0	0	297
Government	Various	Various	N/A	N/A	N/A	1,254	280	1,553	2,000	Cont	Cont
Total			N/A	N/A	N/A	12,221	10,440	9,382	17,341	N/A	N/A

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE February 1999	
BUDGET ACTIVITY 7 - Operational System Development				PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog							PROJECT 2146
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	To Complete	Total Program
Support and Management Organizations - In-House Support.											
Test and Evaluation Organizations - Not Applicable.											
Government Furnished Property: Not Applicable.											
Product Development Property - Not Applicable.											
Support and Management Property - Not Applicable.											
Test and Evaluation Property - Not Applicable.											
Identified as a source for SBIR							296				
Subtotal Product Development					N/A	12,221	10,144	9,382	17,341	Cont	Cont
Subtotal Support and Management					N/A	0	0	0	0	0	0
Subtotal Test and Evaluation					N/A	0	0	0	0	0	0
Total Project					N/A	12,221	10,440	9,382	17,341	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE: February 1999

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708026F Product/Reliable/Avail/Maintain Prog

PROJECT: 4761

COST *($ In Thousands)*	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
4761 Aging Aircraft	9,392	0	0	0	0	0	0	0	Continuing	Continuing

(U) A. Mission Description: This program is comprised of multiple efforts which will transition needed technologies from laboratory research and commercial technology development into fieldable tools or capabilities. Projects will target critical needs of the aging fleet such as corrosion, structural integrity, and improved non-destructive inspection (NDI) methods. Corrosion-related projects include hidden corrosion detection (NDI methods such as eddy current and thermography) and developing a corrosion prediction capability. Structural integrity projects will include the development of alternate repair capabilities and the capability to predict widespread fatigue damage. In addition to the NDI projects addressing corrosion detection, other NDI projects will address multi-layer crack detection and detection of cracks under composite patches. These projects are focused on developing tools (NDI equipment, computer models) and capabilities (alternate repair processes) for Air Logistics Centers (ALCs) use in extending useful aircraft service life, resolving flight safety problems, or replacing components no longer procurable. Projects will typically yield a single, validated prototype system or capability that is production ready; final depot or field implementation (equipment purchases, tech order updates, training, etc.) will be the responsibility of the Major Commands (MAJCOMs) and ALCs. There is strong emphasis on developing solutions that will benefit multiple weapon systems, thereby, reducing or eliminating stovepipe development of platform-specific solutions. Note: Aging aircraft efforts for FY 1999 and out are addressed in PE 0605011F, RDT&E for Aging Aircraft.

(U) FY 1998 ($ in Thousands):

- (U) $4,894 Developed and enhanced predictive tools for crack and corrosion growth, evaluated corrosion monitoring devices, evaluated material substitution as a repair option, and evaluated commercial maintenance practices to determine applicability to military aircraft.
- (U) $395 Performed structural integrity effort to expand use of composite patch repairs beyong wing structures.
- (U) $347 Expanded aircraft NDI capabilities, particularly the ability of ultrasonic scan to detect fatigue cracks in secondary layer structure and to assess damage in the vicinity of wing skin fasteners.
- (U) $3,756 Developed engineering logistics analysis tools to help predict future failure rates, maintain flight safety, and extend the life of aircraft landing gear.
- (U) $9,392 Total

(U) FY 1999: Not Applicable.

(U) FY 2000: Not Applicable.

(U) FY 2001: Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog
	PROJECT 4761

(U) B. Project Change Summary - Description of Significant Changes: Funding for FY 1999 and out will be provided in PE 0605011F, RDT&E for Aging Aircraft.

(U) C. Other Program Funding:

(U) Related Activities:
- (U) PE 0605011F, RDT&E for Aging Aircraft.

(U) D. Acquisition Strategy: Funding was released to the ALCs for projects for which they were OPR. The OPR determined the most appropriate contract vehicle, Design Engineering Program (DEP) contract or full and open competition, to accomplish the project.

(U) E. Schedule Profile:

	FY 1998				FY 1999				FY 2000				FY 2001			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(U) Aging Landing Gear Contract Award				X												
(U) Request For Proposal Release		X	X													
(U) Contract Awards			X	X												

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1999

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708026F Product/Reliable/Avail/Maintain Prog

PROJECT: 4761

(U) A. Project Cost Breakdown ($ in Thousands):

	FY 1998	FY 1999	FY 2000	FY 2001
(U) Corrosion Prediction Tools	4,894	0	0	0
(U) Structural Integrity Efforts	395	0	0	0
(U) Non Destructive Inspection Techniques	347	0	0	0
(U) Aging Landing Gear	3,756	0	0	0
(U) Total	9,392	0	0	0

(U) B. Budget Acquisition History and Planning Information ($ in Thousands):

Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Organizations											
Science Applic Intl Corp	FFP	Jun 98			0	1,967	0	0	0	0	1,940
Southwest Research	FFP	Sep 98			0	395	0	0	0	0	395
Natl Corrosion Indus	FFP	Jun 98			0	1,957	0	0	0	0	2,047
ARINC	FFP	Jun 98			0	970	0	0	0	0	970
General Atomics	FFP	Aug 98			0	3,556	0	0	0	0	3,556
Anal Svcs&Matl	FFP	Aug 98			0	347	0	0	0	0	347
Battelle	FFP	Aug 98			0	200	0	0	0	0	200
Total					N/A	9,392	0	0	0	0	9,392

Support and Management Organizations - Not Applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)											DATE February 1999
BUDGET ACTIVITY 7 - Operational System Development					PE NUMBER AND TITLE 0708026F Product/Reliable/Avail/Maintain Prog						PROJECT 4761
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Test and Evaluation Organizations - Not Applicable.											
Government Furnished Property: Not Applicable.											
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1998	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Property - Not Applicable.											
Support and Management Property - Not Applicable.											
Test and Evaluation Property - Not Applicable.											
Subtotal Product Development					N/A	9,392	0	0	0	0	9,392
Subtotal Support and Management					N/A	0	0	0	0	0	0
Subtotal Test and Evaluation					N/A	0	0	0	0	0	0
Total Project					N/A	9,392	0	0	0	0	9,392

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